

ABSTRACT

A method and apparatus for synthesis of fullerenes and nanotubes in large quantities at an economical cost from graphite in electric arc plasma process are presented. Different embodiments of channeled graphite electrodes for both direct current (DC) and alternative current (AC) processes are disclosed. High productivity of the carbon allotropes is achieved by feeding consumable graphitic electrode into hot plasma zone, injecting of feedstock, catalyst and buffer gas flow through the longitudinal inner channel electrodes into the hot plasma zone and creating the radial gas outflow in the gap between electrodes, and following removal of produced carbon and catalytic vapors from the hot plasma zone into an oxygen deprived reaction vessel for quenching and condensing. Deposited after condensation soot containing carbon allotropes is collected and carbon allotropes are recovered by known techniques. The final products of recovering are fullerenes C_{60} , C_{70} and higher fullerenes or nanotubes.